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## I. EVENT-RELATED POTENTIALS (ERPs)

### A. Difference Testing Employing Cognitive ERPs

Experiments utilizing the cognitive ERP paradigm were initiated employing auditory stimuli in order to provide a quick means for: (1) verifying the relationship between the cognitive component of the ERP and stimulus discriminability and (2) investigating variables (e.g., laterality effects, response localization and polarity, etc.) which may influence the recording, measurement and evaluation of the cognitive component in smoke and flavor discrimination experiments.

To date, four subjects have been presented with pairs of tones that vary in discriminability (easy vs. difficult).<sup>1</sup> Results from these experiments are in agreement with findings from previous flavor experiments. That is, the cognitive component (referred to as the P300 in auditory experiments) elicited to the easy discrimination is larger than the component elicited to the more difficult discrimination, confirming that a relationship does exist between the size of the cognitive component and discriminability. Additionally, mapping of the responses has provided insight into where in the brain maximal cognitive responses are occurring and via FFT analyses of the data, information regarding the frequency spectrum of the component has been gained. Experimentation in this direction will be continued on an "as needed" basis to further explore variables which may be pertinent to the results of flavor and smoke discrimination experiments.

### B. Nasal Event-Related Potentials (NERPs): Smoke Studies

Design modifications were made to the new olfactometer/smoke delivery system resulting in an increase in the airstream flowrate for better stimulus delivery and ERP recordings. The problem with residual odors lingering in the olfactometer airstream during inter-stimulus-intervals was, however, not corrected, and smoke stimuli as currently delivered are not of sufficient volume to elicit good ERPs. These problems should be corrected within a week, at which time smoke studies investigating differences between smoke from DBC Bright and Burley cigarettes as well as smoke from other cigarette types and blends will continue.

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II. THE EFFECTS OF CO<sub>2</sub> ON CIGARETTE SMOKE FLAVOR

Work on this study continues. One additional subject has completed discrimination training and is currently being retested. Training is nearing completion in two other subjects.

III. REFERENCES

1. Wannamaker, I. Notebook No. 8249, pp. 37-193.

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